REMARKS

An Excess Claim Fee Payment Letter is submitted herewith for excess dependent claims.

Claims 1-23, are all the claims presently pending in the application. New claims 22-23 have been added to more completely define the invention.

Claim 6 stands rejected on informalities (e.g., 35 U.S.C. 112, first paragraph). Specifically, claim 6 stands rejected under §112, first paragraph, on the ground that allegedly there is no support for the (RF) link and the infrared (IR) link. This rejection is respectfully traversed in view of the discussion below.

It is noted that the claims have been amended solely to more particularly point out Applicant's invention for the Examiner, and not for distinguishing over the prior art, narrowing the claim in view of the prior art, or for statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**Version with markings to show changes made**".

Claims 1-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Strongin (U.S. Patent No. 6,304,935) (hereinafter "Strongin").

These rejections are respectfully traversed in the discussion below.

I. THE CLAIMED INVENTION

Applicant's invention, as defined for example in independent claim 1 (and substantially similarly in independent claim 9 and 14) is directed to a system (and method) for displaying information including an extended bus bridge, a graphics adaptor coupled to the extended bus bridge, and a monitor coupled to the graphics adaptor to display the information.

 is that the graphics adaptor is localized to the

monitor and the graphics adaptor and the monitor form a display unit (e.g. see page 3, lines 9-12; page 5, lines 7-10, page 6, lines 8-9; and page 10, lines 8-9).

An exemplary configuration of the system (and method) for displaying information including an extended bus bridge where the graphics adaptor is localized within the monitor, is shown in Figs. 3-4 of the application.

With such novel and unique features in the claimed combination, a system for displaying information with a connection between a PC and a monitor can avoid the problems of having a bottleneck in the system caused by having to carry all of the bandwidth of the high resolution image in a connecting cable.

The conventional systems, such as those discussed below and in the Related Art section of the present application, do not have such a structure, and fail to provide for such an operation.

Indeed, such features are clearly not taught or suggested by the cited references.

II. THE REJECTION OF CLAIM 6 UNDER §112, FIRST PARAGRAPH

The Examiner asserts that claim 6 allegedly "[contains] subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. For example, there is no support for the (RF) link and the infrared (IR) link."

Thus, presumably, the Examiner is objecting to the specification and rejecting the claims on the ground that the specification fails to provide an adequate written description, and specifically that the description of the (RF) link and the infrared (IR) link in claim 6 is not adequate. The Examiner's position and reasoning are faulty for several reasons.

Firstly, as the Examiner is aware, in establishing a disclosure, Applicant may rely not only on the description and drawings as filed but also on the original claims. Thus, original dependent claim 6, along with the specification and drawings is part of the disclosure.

Further, Applicant has amended the specification to include the subject matter of dependent claim 6, as shown above. No new matter has been added.

Thus, Applicant respectfully requests that the Examiner withdraw the rejection under §112, first paragraph.

III. THE PRIOR ART REFERENCES

The Examiner asserts that:

> *[Regarding claim 1, 9, and 14] Strongin discloses a method and system for data transmission in data processing systems, especially in the context of data processing systems utilizing the Accelerated Graphics Port (AGP) interface standard.*
>
> *As shown in FIG.1 a high-level component diagram depicting an AGP-enabled data processing system 101 which forms an environment wherein one or more embodiments of the present invention may be practiced.*
>
> *In addition, FIG. 1 will be utilized to show, in broad overview, how the use of texturing to create 3D continuous-animation produces data bottlenecking in non-AGP systems alleviate such data bottlenecking as well as give extended capabilities.*
>
> *Further depicted are display device 110, local frame buffer 112, Central Processing Unit (CPU) 114, system memory 116, Peripheral Components Interconnect (PCI) bus 118, various Input-Output, (I/O) devices 120, Southbridge 122, Industry Standard Architecture (ISA) bus 123, and I/O devices 125.*
> *Strongin fails to disclose (sic) graphic adaptor is localized to the monitor.*
>
> *However, absent a showing of critically and/or unexpected result, it would (sic) been obvious to one of ordinary skill in the art to relocate the graphic adapter to the monitor side instead of the PC housing side as desired as was judicially recognized with IN RE JAPIKEE USPQ70 (CCPA 1950), which recognizes that the relocation of well known element is normally not desired toward patentable subject matter.*

However, Applicant respectfully disagrees.

Strongin is completely different from the present invention and addresses different objectives and uses different methods than those of the present invention.

For example, Strongin primarily deals with the problem of inefficient data transfer from the CPU to an AGP-enabled device directly. As Strongin discloses, an object is to "*substantially*

minimize the computational inefficiencies associated with writing data directly from a CPU to an AGP compliant device" (e.g., see column 5, lines 2-4 of Strongin). These inefficiencies and problems arise in sending transformed texture data to the graphics controller for display.

In Strongin, as shown in Fig. 3, writing directly from the CPU 114 to the AGP-enabled device 100 (e.g., a graphics controller) requires communication between the CPU 114 and the NorthBridge 104 on the system bus and between the NorthBridge 104 and the graphics controller 100 on the AGP bus. The two busses are used in each of the following protocol steps to accomplish a single transfer.

First, the CPU polls the graphics controller to see if it has sufficient space in its command queue, if the command queue of the graphics controller is full, the CPU "spins" (e.g., wastes idle CPU cycles while waiting for the graphics controller to be ready). When the graphics controller reports sufficient space in its command queue, the busses turn around (e.g., information flows from CPU to graphics controller) and the CPU performs a burst of data to the graphics controller in PCI mode. At the end of the PCI burst, the CPU polls the graphics controller again to check for available space in its command queue to perform another transfer.

However, the problem described above, of inefficient data transfer from the CPU to an AGP-enabled device, poses limitations on the practical bandwidth when writing directly to the graphics controller from the CPU. For this reason, the conventional practice is for the CPU to write the transformed texture data to the system memory and then notify the graphics controller. The graphics controller then reads the data from system memory in an AGP pipeline mode.

In Strongin, this problem of inefficient data transfer from the CPU to an AGP-enabled device is addressed by designing a "device mimicking unit 300" in the NorthBridge itself. The device mimicking unit mimics the original graphics controller device in all aspects but has a larger command queue. For example Strongin discloses "*since graphics controller command queue mimicking buffer 304 has substantially larger storage space than graphics controller command queue 200, there will be a substantial reduction in the bottlenecking ordinarily caused by graphics controller command queue 200*" (e.g., see column 10, lines 54-58). In this way the CPU communication involves only the system bus and can be made bottleneck-free by using a sufficiently large command queue in the device mimicking unit. Further, the polling of the graphics controller is also replaced by the use of the PIPE#signal which indicates to the

NorthBridge whether or not the graphics controller is ready to receive new data.

In sharp and fundamental contrast to Strongin, the present invention addresses a completely different problem related to bandwidth bottlenecks. Specifically, in the present invention the object is to solve a problem of a bandwidth bottleneck in cables and wires connecting the PC or workstation to the display subsystem. In the structure of Strongin, this would be the cable connecting the graphics controller 100 to the display device 110, as shown in Figures 2-4.

In the present invention, the solution to such a problem is the use of an "*extended bus bridge*" whose primary and secondary interfaces reside in two different chassis or enclosures connected by a set of wires whose length is the range of a few meters to accommodate the distance between the PC or workstation box and the monitor or display unit. This is much different from Strongen.

In a non-limiting embodiment of the present invention, the extended bus bridge is a PCI-to-PCI bus bridge allowing PCI graphics devices to be attached to the secondary interface of the bridge (e.g., which resides in the display chassis). Nowhere does Strongin teach or suggest such a structure.

Thus, contrary to the Examiner's assertions, while Strongin addresses the bottleneck of writing (texture data) from the CPU to the graphics controller frame buffer, the present invention, in contrast addresses the bottleneck of writing the data from the graphics frame buffer to the remote display through the display cable. That is, Strongin does not address a problem of a link between the AGP-enabled graphics controller 100 and the display device 110, as shown in Figs. 2-4.

Also, while Strongin's invention is all local to the same system or box where signals can only travel a very short distance (few centimeters) usually on the same board or through a local connection between a motherboard and a daughter board, in the present invention, in contrast there are two separate electrical systems that may be separated by up to several meters and may reside in separate enclosures (e.g., (PC box 310 and display unit 320 as shown in Fig. 3 of the invention).

Additionally, Strongin relies upon a "*device mimicking unit*" (e.g., see claim1 in column 12, lines 29-42 of Strongin) inside the bridge to decouple the traffic between the CPU and the

device into two independent streams. One stream, as shown in Fig. 3, is between the CPU 114 and the *"device mimicking unit"* inside the bridge 104 and the other stream is between the bridge 104 and the device being mimicked (e.g., AGP-enabled graphics controller 100).

In contrast, the approach of the present invention is to replace the current bridge design by an "*extended bus bridge*". The extended bus bridge behaves, from a system's perspective, as a regular bus bridge, but the implementation of the extended bus bridge involves two separate devices each residing on a different system and connected by a set of communication wires (e.g., forming a cable). The two sides of the bridge interface to the local and the remote PCI (e.g., or AGP) busses.

Further, the Examiner admits that "Strongin fails to disclose (sic) graphic adaptor is localized to the monitor" (e.g., see page 3 of the Office Action) and he asserts "absent a showing of critically and /or unexpected result, it would (sic) been obvious". Applicant respectfully disagrees and submits that there is a critical and unexpected result.

Specifically, the elimination of a bottleneck in the system caused by having to carry all of the bandwidth of the high resolution image in a connecting cable. Nowhere does Strongin teach or suggest *"a monitor coupled to said graphics adaptor to display the information, such that said graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit.* As described above, in Figs. 2-4 of Strongin the display device 110 is completely separate from the AGP-enabled graphics controller 100 and cannot provide the novel features and advantages of the present invention.

Thus, turning to the clear language of independent claim 1 (and similarly that of independent claims 9 and 14) Strongin fails to teach or suggest "*[a] system for displaying information, comprising:*

an extended bus bridge;

a graphics adaptor coupled to said extended bus bridge; and

a monitor coupled to said graphics adaptor to display the information, such that said graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit" (emphasis Applicant's).

Thus, regarding dependent claims 2-8, 10-13, 15-21 when combined with independent claims 1, 9, and 14, respectively, recite novel and non-obvious features.

In addition, new claims 22-23 are also fully patentable by virtue of the novel and unobvious features and limitations which they recite.

Additionally, the other prior art of record has been reviewed, but it too, even in combination with Strongin, fails to teach or suggest the claimed invention.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-23, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

Date: 10/17/02

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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner Dinh, D., Group Art Unit 2674 at fax number (703) 872-9314 this 17th day of October, 2002.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph on page 9, line 5 has been replaced with the following paragraph.

-- In Figure 3, B0 is the primary side interface of the chip, and it interfaces to the primary PCI bus (bus 0) as a regular PCI-PCI bridge. All PCI traffic addressed to B0 is serialized across a high-speed serial link using, for example, a Gigabit Ethernet as its physical layer. Instead of a cable, the link may be a radio frequency (RF) link or an infrared (IR) link.–

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A system for displaying information, comprising:
an extended bus bridge;
a graphics adaptor coupled to said extended bus bridge; and
a monitor coupled to said graphics adaptor to display the information, such that said graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit.

9. (Amended) A display unit, comprising:
at least a portion of an extended bus bridge;
a graphics adaptor coupled to said at least portion of the extended bus bridge; and
a monitor coupled to said graphics adaptor to display the information, such that said graphics adaptor is localized to said monitor and said graphics adaptor and said monitor comprise a display unit.

14 (Amended) A method of decreasing a bottleneck in a communications bus, comprising:
coupling a graphics adaptor, a central precessing unit (CPU) and a display monitor over said communications bus;

providing an extended bus bridge between said graphics adaptor and said central processing unit (CPU); and

localizing said graphics adaptor to said display monitor and said graphics adaptor and said monitor comprise a display unit.

Please add the following new claims.

-- 22. The system according to claim 3, wherein said display unit including said first portion of said extended bus bridge is housed in a first enclosure,

wherein said CPU coupled to said second portion of said extended bus bridge is housed in a second enclosure, and

wherein said first and second enclosures are physically separated and connected by a set of wires.

23. The method according to claim 16, wherein said display unit including said first portion of said extended bus bridge is housed in a first enclosure,

wherein said CPU coupled to said second portion of said extended bus bridge is housed in a second enclosure, and

wherein said first and second enclosures are physically separated and connected by a set of wires –